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HATCH EXPERIMENT STATION

—OF THE—

MASSACHUSETTS AGRICULTURAL COLLEGE.

BULLETIN NO. 49.

I. ANALYSES OF MANURIAL SUBSTANCES SENT ON FOR EXAMINATION.
II. ANALYSES OF LICENSED FERTILIZERS COLLECTED BY THE AGENT OF THE STATION DURING 1897.

NOVEMBER, 1897.

The Bulletins of this Station will be sent free to all newspapers in the State and to such individuals interested in farming as may request the same.

AMHERST, MASS.:
PRESS OF CARPENTER & MOREHOUSE,
1897.

HATCH EXPERIMENT STATION

OF THE

Massachusetts Agricultural College,

AMHERST, MASS.

By act of the General Court, the Hatch Experiment Station and the State Experiment Station have been consolidated under the name of the Hatch Experiment Station of the Massachusetts Agricultural College. Several new divisions have been created and the scope of others has been enlarged. To the horticultural, has been added the duty of testing varieties of vegetables and seeds. The chemical has been divided, and a new division, "Foods and Feeding," has been established. The botanical, including plant physiology and disease, has been restored after temporary suspension.

The officers are :—

HENRY H. GOODELL, LL. D.,	*Director.*
WILLIAM P. BROOKS, B. SC.,	*Agriculturist.*
GEORGE E. STONE, PH. D.,	*Botanist.*
CHARLES A. GOESSMANN, PH. D., LL. D.,	*Chemist* (Fertilizers).
JOSEPH B. LINDSEY, PH. D.,	*Chemist* (Foods and Feeding).
CHARLES H. FERNALD, PH. D.,	*Entomologist.*
SAMUEL T. MAYNARD, B. SC.,	*Horticulturist.*
J. E. OSTRANDER, C. E.,	*Meteorologist.*
HENRY M. THOMSON, B. SC.,	*Assistant Agriculturist.*
RALPH E. SMITH, B. SC.,	*Assistant Botanist.*
HENRI D. HASKINS, B. SC.,	*Assistant Chemist* (Fertilizers).
CHARLES I. GOESSMANN, B. SC.,	*Assistant Chemist* (Fertilizers).
GEORGE D. LEAVENS, B. SC.,	*Assistant Chemist* (Fertilizers).
EDWARD B. HOLLAND, B. SC.,	*Ass't Chemist*(Foods and Feeding).
FRED W. MOSSMAN, B. SC.,	*Ass't Chemist*(Foods and Feeding).
BENJAMIN K. JONES, B. SC.,	*Assistant in Foods and Feeding.*
ROBERT A. COOLEY, B. SC.,	*Assistant Entomologist.*
G. A. DREW, B. SC.,	*Assistant Horticulturist.*
H. D. HEMENWAY, B. SC.,	*Assistant Horticulturist.*
H. H. ROPER, B. SC.,	*Assistant in Foods and Feeding.*
A. C. MONAHAN,	*Observer.*

The co-operation and assistance of farmers, fruit-growers, horticulturists, and all interested, directly or indirectly, in agriculture, are earnestly requested. Communications may be addressed to the

HATCH EXPERIMENT STATION, Amherst, Mass.

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AGX

DEPARTMENT OF CHEMISTRY.

C. A. Goessmann.

I.

ANALYSES OF COMMERCIAL FERTILIZERS AND MANURIAL SUBSTANCES SENT ON FOR EXAMINATION.

397—400. WOOD ASHES.

I. Received from Northfield, Mass.
II. Received from Northfield, Mass.
III. Received from South Deerfield, Mass.
IV. Received from South Amherst, Mass.

	Per Cent.			
	I.	*II.*	*III.*	*IV.*
Moisture at 100° C.,	3.75	2.24	7.55	9.97
Potassium oxide,	7.31	6.71	6.20	4.74
Phosphoric acid,	1.35	2.35	0.97	1.53
Calcium oxide,	42.60	29.57	45.47	36.98
Insoluble matter,	10.46	22.87	6.55	16.57

401—404.
I. Received from Amherst, Mass.
II. Received from North Hadley, Mass.
III. Received from Malden, Mass.
IV. Received from Taunton, Mass.

	Per Cent.			
	I.	*II.*	*III.*	*IV.*
Moisture at 100° C.,	9.00	15.48	.005	15.86
Potassium oxide,	5.12	3.85	6.03	5.35
Phosphoric acid,	1.35	1.28	1.58	1.28
Calcium oxide,	35.50	39.50	50.58	34.60
Insoluble matter,	15.02	8.49	16.71	13.47

405—408.
I. Received from Sunderland, Mass.
II. Received from North Amherst, Mass.
III. Received from Westboro, Mass.
IV. Received from Sunderland, Mass.

	Per Cent.			
	I.	*II.*	*III.*	*IV.*
Moisture at 100° C.,	7.57	11.20	12.28	10.73
Potassium oxide,	5.48	5.28	5.54	5.79
Phosphoric acid,	1.69	1.74	1.07	1.23
Calcium oxide,	36.49	39.46	23.64	33.86
Insoluble matter,	14.54	10.56	35.67	16.12

409—412. I. Received from Leverett, Mass.
II. Received from Sunderland, Mass.
III. Received from Hadley, Mass.
IV. Received from Sunderland, Mass.

	Per Cent.			
	I.	*II.*	*III.*	*IV.*
Moisture at 100° C.,	10.98	14.07	5.15	18.26
Potassium oxide,	7.86	6.28	6.66	6.28
Phosphoric acid,	1.48	1.60	2.20	1.02
Calcium oxide,	21.01	29.82	36.60	34.47
Insoluble matter,	28.27	13.23	23.80	14.40

413—417. I. Received from Concord, Mass.
II. Received from Swansea Centre, Mass.
III. Received from Hadley, Mass.
IV. Received from North Westport, Mass.
V. Received from North Amherst, Mass.

	Per Cent.				
	I.	*II.*	*III.*	*IV.*	*V.*
Moisture at 100° C.,	14.03	20.24	20.45	19.32	5.37
Potassium oxide,	6.32	6.80	4.40	4.64	4.88
Phosphoric acid,	1.09	1.25	2.35	1.30	1.37
Calcium oxide,	29.33	31.80	32.04	32.54	*
Insoluble matter,	31.80	37.81	24.07	13.95	12.38

418—422. I. Received from North Amherst, Mass.
II. Received from South Amherst, Mass.
III. Received from North Hatfield, Mass.
IV. Received from Fitchburg, Mass.
V. Received from Sunderland, Mass.

	Per Cent.				
	I.	*II.*	*III.*	*IV.*	*V.*
Moisture at 100° C.,	12.80	19.18	9.83	14.40	5.70
Potassium oxide,	5.28	3.97	4.36	5.02	6.60
Phosphoric acid,	1.25	1.28	1.40	1.59	1.02
Calcium oxide,	*	36.45	38.26	31.64	44.49
Insoluble matter,	12.20	10.06	22.90	41.39	17.01

423—424. COTTON SEED MEAL.

I. Received from Springfield, Mass.
II. Received from Sunderland, Mass.

	Per Cent.	
	I.	*II.*
Moisture at 100° C.,	7.50	10.83
Nitrogen,	7.34	3.24
Potassium oxide,	1.50	1.58
Phosphoric acid,	1.71	2.23

* Not determined.

425—426. TANKAGE.

I. Received from Rock Bottom, Mass.

II. Received from West Springfield, Mass.

	Per Cent.	
	I.	*II.*
Moisture at 100° C.,	10.99	16.30
Nitrogen,	5.03	7.05
Total phosphoric acid,	13.36	11.39
Reverted phosphoric acid,	9.96	3.61
Insoluble phosphoric acid,	3.40	7.78

427—430. GROUND BONE AND DRY FISH.

I. Ground bone received from Rock Bottom, Mass.

II. Ground bone received from Amesbury, Mass.

III. Ground bone received from Northboro, Mass.

IV. Dry ground fish received from Rock Bottom, Mass.

	Per Cent.			
	I.	*II.*	*III.*	*IV.*
Moisture at 100° C.,	4.00	5.39	4.40	7.96
Nitrogen,	2.84	3.09	3.85	7.69
Total phosphoric acid,	20.90	25.71	24.70	7.08
Reverted phosphorie acid,	13.35	5.65	5.90	3.48
Insoluble phosphoric acid,	7.55	20.06	18.80	3.60

COTTON WASTE, HOP REFUSE AND SPENT BREWER'S GRAIN.

431—433. I. Cotton waste received from Amesbury, Mass.

II. Hop refuse received from Sunderland, Mass.

III. Spent brewer's grain from Sunderland, Mass.

	Per Cent.		
	I.	*II.*	*III.*
Moisture at 100° C.,	27.02	85.20	73.10
Nitrogen,	.84	.691	1.23
Potassium oxide,	.52	.06	.07
Phosphoric acid,	.74	.10	.33

434—439. MUCK, COMPOST, SOIL AND LOAM.

I. Soil received from Hopkinton, Mass.

II. Soil received from Boston, Mass.

III. Loam received from Boston, Mass.

IV. Muck received from Brookline, Mass.

V. Muck received from Brookline, Mass.

VI. Compost received from Palmer, Mass.

	I.	II.	III.	IV.	V.	VI.
				Per Cent.		
Moisture at 100° C.,	80.86	4.37	1.78	75.91	95.38	1.70
Ash,	5.41	74.54	88.88	11.18	*	*
Nitrogen,	.38	.38	.15	.30	.92	.79
Phosphoric acid,	trace,	trace,	trace,	trace,	trace,	.56
Calcium oxide,	trace,	.38	trace,	trace,	trace.	*
Potassium oxide,	*	*	*	*	*	.97

440. SHEEP MANURE.

Received from Sunderland, Mass.

	Per Cent.
Moisture at 100° C.,	15.60
Nitrogen,	.85
Potassium oxide,	.68
Phosphoric acid,	.22
Insoluble matter,	63.39

441—443. SULPHATE OF AMMONIA.

I. Received from Amesbury, Mass.
II. Received from Fitchburg, Mass.
III. Received from Fitchburg, Mass.

	I.	II.	III.
		Per Cent.	
Moisture at 100° C.,	1.78	.45	.17
Nitrogen,	20.16	20.89	21.22

444—445. NITRATE OF SODA.

I. Received from Amesbury, Mass.
II. Received from Fitchburg, Mass.

	I.	II.
	Per Cent.	
Moisture at 100° C.,	1.41	1.70
Nitrogen,	15.87	16.08

SULPHATE OF POTASH AND MURIATE OF POTASH.

446—448.

I. Sulphate of potash, received from Rock Bottom, Mass.
II. Sulphate of potash, received from Fitchburg, Mass.
III. Muriate of potash, received from Amesbury, Mass.

	I.	II.	III.
		Per Cent.	
Moisture at 100° C.,	2.40	.87	.92
Potassium oxide,	51.96	46.84	51.60

* Not determined.

SOUTH CAROLINA ROCK PHOSPHATE AND ACID PHOSPHATES.

449—451.

I. So.Carolina rock phosphate,received from So.Sandisfield,Mass.
II. Acid phosphate, received from Amesbury, Mass.
III. Acid phosphate, received from Amesbury, Mass.

		Per Cent	
	I	*II.*	*III.*
Moisture at 100° C.,	1.06	7.36	9.32
Total phosphoric acid,	31.78	17.48	13.43
Soluble phosphoric acid,	—	2.02	6.01
Reverted phosphoric acid,	*	6.71	5.87
Insoluble phosphoric acid,	*	8.75	1.55

452—458. COMPLETE FERTILIZERS.

I. Scientific potato fertilizer, received from Milford, Mass.
II. Compound fertilizer No.I.,received from Swansea Centre,Mass.
III. Comp. fertilizer No. II, received from Swansea Centre, Mass.
IV. Hatch Special, received from Amesbury, Mass.
V. Top dressing, received from Amesbury, Mass.
VI. Lavery's fertilizer, received from Amesbury, Mass.
VII. Complete root manure, received from Sunderland, Mass.

			Per Cent.	
	I.	*II.*	*III.*	*IV.*
Moisture at 100° C.,	7.39	12.80	12.88	17.80
Nitrogen,	1.87	4.05	3.01	4.10
Potassium oxide,	5.21	11.59	11.74	8.11
Total phosphoric acid,	12.74	7.47	8.32	8.60
Soluble phosphoric acid,	8.49	2.75	5.12	—
Reverted phosphoric acid,	2.10	2.88	1.46	4.66
Insoluble phosphoric acid,	2.15	1.84	1.74	3.94

		Per Cent	
	V.	*VI.*	*VII.*
Moisture at 100° C.,	10.42	9.97	13.37
Nitrogen,	4.32	1.91	2.22
Potassium oxide,	9.74	1.41	12.02
Total phosphoric acid,	10.21	5.68	11.13
Soluble phosphoric acid,	1.36	.51	6.63
Reverted phosphoric acid,	6.73	3.76	2.33
Insoluble phosphoric acid,	2.12	1.41	2.17

II. ANALYSES OF COMMERCIAL FERTILIZERS COLLECTED DURING 1897, IN THE GENERAL MARKETS BY THE AGENT OF THE HATCH EXPERIMENT STATION OF THE MASSACHUSETTS AGRICULTURAL COLLEGE.

Laboratory No.	Name of Brand	Name of Manufacturer.	Sampled at
	Compound Fertilizers.		
2	Farmer's Choice Bone Phosphate,	I. P. Thomas & Son Co., Philadelphia, Pa.,	Amherst.
3	Potato and Tomato Manure,	I. P. Thomas & Son Co., Philadelphia, Pa.,	Amherst.
4	Tobacco Fertilizer,	I. P. Thomas & Son Co., Philadelphia, Pa.,	Amherst.
5	Martin's Bone Mixture,	I. P. Thomas & Son Co., Philadelphia, Pa.,	Amherst.
6	Normal Bone Phosphate,	I. P. Thomas & Son Co., Philadelphia, Pa.,	Amheret.
7	S. C. Phosphate,	I. P. Thomas & Son Co., Philadelphia, Pa.,	Amherst.
8	S. C. Phosphate with Potash, 2 per cent.,	I. P. Thomas & Son Co., Philadelphia, Pa.,	Amherst.
17	Champion Fertilizer,	D. Whithed, Lowell, Mass.,	Amherst.
20	Animal Fertilizer,	Lowell Fertilizer Co., Lowell, Mass.,	Amherst.
21	Complete Potato and Vegetable Manure,	Lowell Fertilizer Co., Lowell, Mass.,	Amherst.
22	Potato Phosphate,	Lowell Fertilizer Co., Lowell, Mass.,	Amherst.
23	Dissolved Bone and Potash,	Lowell Fertilizer Co., Lowell, Mass.,	Amherst.
24	Empire Fertilizer,	Lowell Fertilizer Co., Lowell, Mass.,	Amherst.
25	Potato Manure,	Quinnipiac Co., Boston, Mass.,	Plymouth.
26	Pioneer Fertilizer,	Cleveland Dryer Co., Boston, Mass.,	Plymouth.
27	Special Potato Brand,	Crocker Fertilizer and Chemical Co., Buffalo, N. Y.,	NewBedford.
29	Practical Ammoniated Superphosphate,	Crocker Fertitizer and Chemical Co., Buffalo, N. Y.,	NewBedford.
30	Cumberland Superphosphate,	Cumberland Bone Phosphate Co., Boston, Mass.,	Dartmouth.
31	Fish, Bone and Potash,	Read FertilizerCo., New York, N. Y.,	Amesbury.
32	Americus Brand Potato and Tobacco Manure,	Williams & Clarke Fertilizer Co., Boston, Mass.,	Greenfield.
69	Potato Manure,	Quinnipiac Co., Boston, Mass.,	Easthampton
194	Animal Fertilizer,	Lowell Fertilizer Co., Lowell, Mass.,	Lowell.
213	Potato Phosphate,	Lowell Fertilizer Co., Lowell, Mass.,	Lowell.
247	Complete Potato and Vegetable Manure,	Lowell Fertilizer Co., Lowell, Mass.,	Fall River.
276	Cumberland Superphosphate,	Cumberland Bone Phosphate Co., Boston, Mass.,	Housatonic.
286	Dissolved Bone and Potash,	Lowell Ferlilizer Co., Lowell, Mass.,	Fall River.
287	Potato Phosphate,	Lowell Fertilizer Co., Lowell, Mass.,	Springfield.

Laboratory Number.	Name of Brand.	Moisture.	Nitrogen in 100 lbs.		Phosphoric Acid in 100 lbs.							Potassium Oxide in 100 lbs.	
								Total.		Available.			
			Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Compound Fertilizers.												
2	Farmer's Choice Bone Phosphate,	12.83	2.18	1.65-2.47	4.66	4.37	3.12	12.15	11.5-14.	9.03	9.5-11.	4.37	4-6
3	Potato and Tomato Manure,	10.98	2.10	1.65-2.47	9.54	.80	1.20	11.54	10.5-13.5	10.34	9-11	8.16	6-8
4	Tobacco Fertilizer,	10.20	1.43	2.06-3.30	9.67	1.18	1.28	12.13	11-14	10.85	9-11	7.99	7-8
5	Martin's Bone Mixture,	7.25	1.21	.82-1.65	9.46	4.48	6.40	20.34	19-22	13.94	—	—	—
6	Normal Bone Phosphate,	13.97	1.14	.82-1.65	5.50	1.54	1.66	8.70	8-11	7.04	7-9	4.04	4-6
7	S. C. Phosphate,	8.72	—	—	14.46	1.28	.90	16.64	15-19	15.74	13-16	—	—
8	S. C. Phosphate with Potash, 2 %	12.27	—	—	9.34	4.10	1.40	14.84	—	13.44	9-12	2.15	2
17	Champion Fertilizer,	3.45	4.33	3.94	—	4.58	10.24	14.82	14.70	4.58	8.38	7.58	5.30
20-194	Animal Fertilizer,	6.12	3.54	2.46-3.25	3.70	4.98	2.44	11.12	10-12	8.68	9-12	4.05	4-5
21-247	Complete Potato and Vegetable Manure,	7.07	2.43	2-3	4.98	4.10	2.30	11.38	9-10	9.08	8-10	3.69	3.5-4.5
22-213-287	Potato Phosphate,	9.51	2.64	2.47-3.30	5.17	3.01	1.54	9.72	9-10	8.18	8-10	6.08	6-7
23-286	Dissolved Bone and Potash,	10.47	1.73	1.65-2.50	5.58	4.35	2.97	12.90	10-11	9.93	9-11	1.94	2-3
24	Empire Fertilizer,	5.67	1.84	1.22-2.05	2.68	3.98	2.04	8.70	—	6.66	7-9	2.01	2-3*
25-69	Potato Manure,	9.47	2.56	2.47-3.30	4.60	1.61	2.37	8.58	7-11	6.21	6-9	5.54	5-6
26	Pioneer Fertilizer,	14.55	1.18	.82-1.64	4.78	2.85	1.89	9.52	9-12	7.63	7-9	1.08	1-3
27	Special Potato Brand,	13.92	3.62	3.70-4.50	6.96	1.74	.51	9.21	9-12	8.70	8-10	6.12	5.4-6.4
29	Practical Ammoniated Superphosphate,	20.95	1.29	.82-1.64	5.07	3.07	3.22	11.36	9-12	8.14	8-10	1.72	1.08-2.00
30-276	Cumberland Superphosphate,	15.25	2.37	2.06-2.89	5.17	3.84	2.81	11.82	10-13	9.01	8-10	2.22	2-3
31	Fish, Bone and Potash,	11.10	2.66	2.5-3	1.87	2.53	1.84	6.24	5-6	4.40	4-5	4.83	4-5
32	Americus Brand Potato & Tobacco Manure,	13.02	3.04	2.06-2.89	3.96	4.60	3.08	11.64	9-13	8.56	8-11	3.80	3-4

*Sulphate of potash the source of potash.

II. ANALYSES OF COMMERCIAL FERTILIZERS COLLECTED DURING 1897, IN THE GENERAL MARKETS BY THE AGENT OF THE HATCH EXPERIMENT STATION OF THE MASSACHUSETTS AGRICULTURAL COLLEGE.

Laboratory No.	Name of Brand.	Name of Manufacturer.	Sampled at
	Compound Fertilizers.		
37	English Lawn Fertilizer,	Bradley Fertilizer Co., Boston, Mass.,	Amherst.
39	Potato, Onion and Tobacco Manure,	Wilcox Fertilizer Works, Mystic, Conn.,	Amherst.
40	High Grade Fish and Potash,	Wilcox Fertilizer Works, Mystic, Conn.,	Amherst.
41	Fish and Potash,	Wilcox Fertilizer Works, Mystic, Conn,,	Amherst.
42	Potato Manure,	Packer's Union Fertilizer Co., New York, N. Y.,	Amherst.
43	Animal Corn Fertilizer.	Packer's Union Fertilizer Co., New York, N. Y.,	Amherst.
44	Universal Fertilizer,	Packer's Union Fertilizer Co., New York, N. Y.,	Amherst.
46	Potato Phosphate,	Williams & Clark Fertilizer Co., Boston, Mass.,	Northampton
47	Ammoniated Bone Superphosphate,	Williams & Clark Fertilizer Co., Boston, Mass.,	Northampton
49	Dry Ground Fish,	Williams & Clark Fertilizer Co., Boston, Mass.,	Northampton
55	Tankage,	Bowker Fertilizer Co., Boston, Mass.,	Northampton
58	Market Garden Fertilizer,	Bowker Fertilizer Co., Boston, Mass.,	Northampton
70	Potato Manure,	Bradley Fertilizer Co., Boston, Mass.,	Easthampton
73	Potato Manure,	M. E. Wheeler & Co., Rutland, Vt.,	Easthampton
75	Corn Fertilizer,	M. E. Wheeler & Co., Rutland, Vt.,	Easthampton
108	Dry Ground Fish,	Williams & Clark Fertilizer Co., Boston, Mass.,	Greenfield.
126	Ammoniated Bone Superphosphate,	Williams & Clark Fertilizer Co., Boston, Mass.,	Greenfield.
175	Potato Manure,	Bradley Fertilizer Co., Boston, Mass.,	Haverhill.
188	Potato Phosphate,	Williams & Clark Fertilizer Co. Boston, Mass.,	Greenfield.
271	Corn Fertilizer,	M. E. Wheeler & Co., Rutland, Vt,,	Tyringham.
277	Potato Manure,	M. E. Wheeler & Co., Rutland, Vt.,	Tyringham.
343	Ammoniated Bone Superphosphate,	Williams & Clark Fertilizer Co., Boston, Mass.,	Fitchburg.
349	Potato Phosphate,	Williams & Clark Fertilizer Co., Boston, Mass.,	Fitchburg.
366	Animal Corn Fertilizer,	Packer's Union Fertilizer Co., New York, N. Y.,	Westfield.
377	Potato Manure,	Packer's Union Fertilizer Co., New York, N. Y.,	Westfield.
381	Universal Fertilizer,	Packer's Union Fertilizer Co., New York, N. Y.	Westfield.

Laboratory Number.	Name of Brand.	Moisture.	Nitrogen in 100 lbs.		Phosphoric Acid in 100 lbs.							Potassium Oxide in 100 lbs.	
								Total.		Available.			
			Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Compound Fertilizers.												
37	English Lawn Fertilizer,	7.76	4.97	4.95-5.78	.90	4.09	2.33	7.32	6-8	4.99	5-7	2.66	2.5-3.5
39	Potato, Onion and Tobacco Manure,	14.22	2.58	3.30-4.30	2.44	5.62	2.18	10.24	8-10	8.06	7-9	6.74	6-7
40	High Grade Fish and Potash,	18.55	3.39	3.25-4.25	3.20	2.56	1.28	7.04	6-8	5.76	5-7	4.83	4-5
41	Fish and Potash	21.60	2.86	2.5-3.5	.52	4.60	2.94	8.06	6-8	5.12	5-7	3.92	3-4
42-377	Potato Manure,	12.60	2.13	2.06-2.88	6.40	2.31	1.79	10.50	9-15	8.71	8-12	6.00	6.-8.
43-366	Animal Corn Fertilizer,	12.46	2.53	2.47-3.29	5.84	3.12	1.66	10.62	9-15	8.96	8-12	2.26	2-4
44-381	Universal Fertilizer,	14.45	1.24	.82.1.64	6.02	2.68	1.02	9.72	9-15	8.70	8-12	4.98	5-8
46-188-349	Potato Phosphate,	10.92	3.70	2.47.2.30	4.60	1.20	2.44	8.26	7-11	5.80	6-9	5.10	5-6
47-126-343	Ammoniated Bone Superphosphate,	12.90	2.50	2.47-3.20	7.34	2.23	2.10	11.67	10-13	9.57	9-11	2.32	2-3
49-108	Dry Ground Fish,	10.35	10.12	7.41-9.06	.26	4.54	2.68	7.48	7-9	4.80	—	—	—
55	Tankage,	5.10	2.62	2.47-3.30	—	2.44	11.76	14.20	13-15	2.44	—	—	—
58	Market Garden Fertilizer,	12.64	2.42	2.25-3.25	6.24	.94	3.51	10.69	8-12	7.18	6-8	9.56	10-12
70-175	Potato Manure,	9.67	2.61	2.50-3.25	4.22	2.79	1.56	8.57	8-11	7.01	6-8	5.54	5-6
73-277	Potato Manure,	14.45	2.33	2.05-2.88	5.96	2.21	1.71	9.98	9-14	8.17	8-12	3.48	3.25-4.
75-271	Corn Fertilizer,	13.17	2.60	1.64-2.47	5.76	2.70	2.04	10.50	9-15	8.46	8-12	2.30	2-3

II. ANALYSES OF COMMERCIAL FERTILIZERS COLLECTED DURING 1897,, IN THE GENERAL MARKETS BY THE AGENT OF THE HATCH EXPERIMENT STATION OF THE MASSACHUSETTS AGRICULTURAL COLLEGE.

Laboratory No.	Name of Brand.	Name of Manufacturer.	Sampled at
	Compound Fertilizers.		
83	Superphosphate,	Prentiss, Brooks & Co., Holyoke, Mass.,	Holyoke.
84	Complete Manure for Top-dressing Grass,	Prentiss, Brooks & Co., Holyoke, Mass.,	Holyoke.
91	Eagle Brand for Grass and Grain,	W. H. Abbott, Holyoke, Mass.,	Holyoke.
93	Pride of the Valley,	Kirley & Griffith Bros., S. Hadley Falls,	S. Hadley Falls
99	Fish and Potash,	Bradley Fertilizer Co., Boston, Mass.,	Holyoke.
100	Complete Manure for Corn and Grain,	Bradley Fertilizer Co., Boston, Mass.,	Holyoke.
105	Market Garden Fertilizer,	National Fertilizer Co., Bridgeport, Conn.,	Sunderland.
106	Essex Potato Root and Vegetable Manure,	Russia Cement Co., Gloucester, Mass.,	Beverly.
114	Potato Manure,	Mapes Formula & Peruvian Guano Co., New York, N. Y.	Greenfield.
116	Seeding Down Manure,	Bradley Fertilizer Co., Boston, Mass.,	Haverhill.
117	Meat and Bone,	Thomas Hersom, New Bedford, Mass.,	Amherst.
119	Essex Corn, Grain and Grass Manure,	Russia Cement Co., Gloucester, Mass.,	Beverly.
122	Potato, Hop and Tobacco Phosphate,	M. E. Wheeler & Co., Rutland, Vt.,	Greenfield.
125	Corn Phosphate,	Williams & Clark Fertilizer Co,, Boston, Mass.,	Greenfield.
127	Complete Manure for General Use,	Mapes Formula & Peruvian Guano Co., New York, N.Y.	Greenfield.
130	Bay State Ammoniated Bone Superphosphate,	E. Frank Coe Co., New York, N. Y.,	Haverhill.
132	Original Bay State Bone Superphosphate,	H. J. Tucker & Co., Boston, Mass.,	Haverhill.
134	Fish and Potash,	Williams & Clark Fertilizer Co., Boston, Mass.,	Greenfield.
171	Essex Potato, Root and Vegetable Manure,	Russia Cement Co., Gloucester, Mass.,	Sunderland.
182	Essex Corn, Grain and Grass Manure,	Russia Cement Co., Gloucester, Mass.,	Athol.
184	Seeding Down Manure,	Bradley Fertilizer Co., Boston, Mass.,	Athol.
185	Essex Potato Root and Vegetable Manure,	Russia Cement Co., Gloucester, Mass.,	Athol.
195	Original Bay State Bone Superphosphate,	H. J. Tucker & C., Boston, Mass.,	Leominster.
329	Essex Potato, Root and Vegetable Manure,	Russia Cement Co., Gloucester, Mass.,	Palmer.
331	Complete Manure for General Use,	Mapes Formula & Peruvian Guano Co., New York, N. Y.	Worcester.
351	Corn Phosphate,	Williams & Clark Fertilizer Co., Boston, Mass.,	Fitchburg.
352	Eagle Brand for Grass and Grain,	W. H. Abbott, Holyoke, Mass.,	Amherst.

Laboratory Number.	Name of Brand.	Moisture.	Nitrogen in 100 lbs.		Phosphoric Acid in 100 lbs.							Potassium Oxide in 100 lbs.	
								Total.		Available.			
			Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Compound Fertilizers.												
83	Superphosphate,	9.82	2.66	2.06-2.47	3.32	4.74	7.04	15.10	10-12	8.06	8-10	3.34	2.5-3.
84	Complete Manure for Top Dressing,	5.77	4.34	4.12-4.94	1.48	4.16	6 26	11.90	7-9	5.64	5-6	8.76	7-9
91-352	Eagle Brand for Grain and Grass,	9.82	2.50	2.47-3.30	—	7.16	11.52	18.68	17-18	7.16	—	10.00	10-11*
93	Pride of the Valley,	15.90	1.95	1.5-2.5	.52	3.12	3.78	7.32	7-9	3.64	—	8.47	8-10
99	Fish and Potash,	16.35	2.07	2.06-2.88	1.80	2.94	3.32	8.06	7.5-10.5	4.74	6-8	2.46	2-3
100	Complete Corn and Grain Manure,	10.93	3.36	3.30-4.12	5.50	8.67	1.28	15.45	13-16	14.17	12-14	3.36	3 4
105	Market Garden Fertilizer,	11.12	3.47	2.5-3.	6.52	1.66	2.56	10.74	9-11	8.18	7-9	6.64	6-8
106-171-185-329	Essex Potato, Root and Vegetable,	7.03	4.75	3.71-4.53	4.02	3 68	2.23	10.93	9-11	7.70	7-8	9.16	8.5-10.*
114	Potato Manure,	7.65	3 81	3.71-4.12	4.60	2.90	2.30	9.80	8-10	7.50	8	7.66	6-8*
116-184	Seeding Down Manure,	12.32	2.72	2.5-3.25	6.26	5.55	1.16	12.97	12-16	11.81	7-9	2.20	2-3
117	Meat and Bone,	12.50	5.05	4 5-5.5	—	5.12	12.66	17.78	17-18	5.12	5-6	—	—
119-182	Essex Corn, Grain and Grass	8.67	4.04	3 7-4.5	3.61	5.49	2.70	11.80	9.5-11	9.10	7-8	9.94	9.5-11
122	Potato, Hop and Tobacco Phosphate,	13.04	2 20	2-3	7.54	4.63	.52	12.69	11-14	12.17	10-12	3.50	3.25-4.30
125-351	Corn Phosphate,	12.09	2.36	2.06-2.89	7.65	1.71	2.15	11.51	10-14	9.36	9-12	1.76	1.5-2.5
127-331	Complete Manure for General Use,	15.55	3.61	3.30-4.12	5.76	2.75	2.49	11.00	10-12	8.51	8-10	5.26	4-5
130	Bay State Ammoniated Bone Superphos'te,	12.33	2.03	2.-2.8	7.11	1.34	2.71	11.16	11-13	8.45	9-12	2.12	1.85-2.
132-195	Original Bay State Bone Superphosphate,	18.97	2.09	2.06-2.47	7.01	1.97	2.53	11.51	11 13	8.98	9-12	2.14	2-3
134	Fish and Potash,	16.05	2.41	2.-2.85	1.40	3.58	3.46	8.44	6-9	4.98	4.-6	4.05	4-6

*Sulphate of potash the source of potash.

II. ANALYSES OF COMMERCIAL FERTILIZERS COLLECTED DURING 1897, IN THE GENERAL MARKETS BY THE AGENT OF THE HATCH EXPERIMENT STATION OF THE MASSACHUSETTS AGRICULTURAL COLLEGE.

Laboratory No.	Name of Brand.	Name of Manufacturer.	Sampled at
	Compound Fertilizers.		
136	Complete Fertilizer for Tobacco,	National Fertilizer Co., Bridgeport, Conn.,	Sunderland.
138	Fish and Potash,	W. J. Brightman & Co., Tiverton, R. I.,	Taunton.
140	Wood Ashes,	Bowker Fertilizer Co., Boston, Mass.,	Taunton.
141	Potato and Tobacco Fertilizer,	Clark's Cove Fertilizer Co., Boston, Mass.,	Springfield.
144	Bay State Potato Manure,	Clark's Cove Fertilizer Co., Boston, Mass.,	Springfield.
145	Dry Ground Fish,	National Fertilizer Co., Bridgeport, Conn.,	Sunderland.
148	Pulverized Bone and Meat,	Lucien Sanderson, New Haven, Conn.,	Hadley.
149	Fish and Potash,	Clark's Cove Fertilizer Co., Boston, Mass.,	Springfield.
151	Market Garden Manure,	Quinnipiac Co., Boston, Mass.,	Plymouth.
152	Fish and Potash "D" Brand,	Joseph Church, Tiverton, R. I.,	Springfield.
153	Bay State Fertilizer,	Clark's Cove Fertilizer Co., Boston, Mass.,	Springfield.
154	Harvest Home Phosphate,	H. J. Baker & Bro., New York, N.Y.,	Springfield.
156	Potato Special Fertilizer,	Walker, Stratman & Co., Pittsburg, Pa.,	Springfield.
157	Four Fold Fertilizer,	Walker, Stratman & Co., Pittsburg, Pa.,	Springfield.
158	Standard Un XLD Fertilizer,	H. J. Baker & Bro., New York, N. Y.,	Springfield.
162	Complete Corn Manure,	H. J. Baker & Bro., New York, N. Y.,	Springfield.
163	King Philip Alkaline Guano,	Clark's Cove Fertilizer Co., Boston, Mass.,	Springfield.
228	Fish and Potash "D" Brand,	Joseph Church, Tiverton, R. I.,	New Bedford
261	Pulverized Bone and Meat,	Lucien Sanderson, New Haven, Conn.,	Sunderland.
265	Wood Ashes,	Bowker Fertilizer Co., Boston, Mass.,	Sunderland.
273	Market Garden Manure,	Quinnipiac Co., Boston, Mass.,	Pittsfield.
284	Market Garden Manure,	Quinnipiac Co., Boston, Mass.,	Taunton.
289	King Philip Alkaline Guano,	Clark's Cove Fertilizer Co., Boston, Mass.,	North Adams
315	Bay State Potato Manure,	Clark's Cove Fertilizer Co., Boston, Mass.,	Westfield.
316	Complete Fertilizer for Tobacco,	National Fertilizer Co., Bridgeport, Conn.,	Hadley.
378	Bay State Fertilizer,	Clark's Cove Fertilizer Co., Boston, Mass.,	Spencer.
383	Complete Corn Manure,	H. J. Baker & Bro., New York, N. Y.,	Worcester.

Laboratory Number.	Name of Brand.	Moisture.	Nitrogen in 100 lbs.		Phosphoric Acid in 100 lbs.							Potassium Oxide in 100 lbs.	
								Total.		Available.			
			Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Compound Fertilizers.												
136-316	Complete Fertilizer for Tobacco,	9.91	4.20	3.30-4.10	6.22	2.59	.38	9.19	9-10	8.81	8-11	7.90	10-12
138	Fish and Potash,	17.28	3.13	2.07-2.90	1.64	4.19	2.87	8.70	7.5-10.5	5 83	6-8	2.30	2-3
140-265	Wood Ashes,	11.12	—	—	—	—	—	.83	1-3	—	—	5.38	5-7
141	Potato and Tobacco Fertilizer,	10.17	2.56	2.06-2.80	3.97	4.93	3.07	11.97	9-13	8.90	7.5-11	3.64	3-4
144-315	Bay State Potato Manure,	11.05	2,47	2.47-3.30	3.25	5.24	2.60	8.49	7-11	8·49	6-9	5.02	5-6
145	Dry Ground Fish,	15.10	8.88	8.24-9.06	—	3.58	4.10	7.68	6-8	3.58	—	—	—
148-261	Pulverized Bone and Meat,	3.92	4 25	4.94-5.77	—	4.22	12.54	16.76	18-20	4.22	—	—	—
149	Fish and Potash,	17.09	2.17	2.06-2.89	2.04	3.95	2.94	8.93	7-10	5.99	6-8	2.13	2-3
151-273-284	Market Garden Manure,	10.77	4.12	3.30-4.12	4.91	3.51	1.84	10.26	9-13	8.42	8-11	7.06	7-8
152-228	Fish and Potash "D" Brand,	17.87	2.28	2.07-2.90	2.32	3.23	3.08	8.63	7.50-10.5	5.55	6-8	2.34	2-3
153-378	Bay State Fertilizer,	11.17	2.76	2.47-3.30	5.24	4.86	2.44	12.54	10-14	10.10	9-12	2.07	2-3
154	Harvest Home Phosphate,	12.50	1.45	1.30-1.65	3.84	4.45	2.38	10.67	9-10	8.29	8-9	2.32	2-3
156	Potato Special Fertilizer,	7.93	2.11	2.00-2.25	7.98	3.25	3.30	14.53	13-15	11.23	9-10	5.18	5-6
157	Four Fold Fertilizer,	10.07	1.32	1.-1.25	4.60	4.12	3.04	11.76	11-14	8.72	8-10	1.62	1-2
158	Standard Un X L D Fertilizer,	14.61	2.28	1.85-2.68	6.91	1.51	1.66	10.08	9-11	8.42	8-10	2.60	2.25-3.25
162-383	Complete Corn Manure,	10.32	4.07	4.11-5.00	5.37	1,69	1.00	8.06	7.25-9.00	7.06	6-8	6,96	7-8
163-289	King Philip Alkaline Guano,	10.91	1.19	.91-1.65	4.10	4.74	1.80	10.64	9-12	8.84	8-10	2.06	2-3

II. ANALYSES OF COMMERCIAL FERTILIZERS COLLECTED DURING 1897, IN THE GENERAL MARKETS BY THE AGENT OF THE HATCH EXPERIMENT STATION OF THE MASSACHUSETTS AGRICULTURAL COLLEGE.

Laboratory No.	Name of Brand.	Name of Manufacturer.	Sampled at
	Compound Fertilizers.		
166	Sheep Fertilizer,	J. J. Peters & Co., Long Island, N. Y.,	Boston.
167	Nobsque Guano,	Pacific Guano Co., Boston Mass.,	Plymouth.
169	High Grade F. F. Truck Fertilizer,	Read Fertilizer Co., New York, N. Y.,	Amesbury.
172	Soluble Pacific Guano,	Pacific Guano Co., Boston, Mass.,	Sunderland.
174	Garden Special,	Great Eastern Fertilizer Co., Rutland, Vt.,	Leverett.
176	Essex Cauliflower and Cabbage Manure,	Russia Cement Co., Gloucester, Mass.,	Beverly.
179	Complete Manure with 10 per cent Potash,	Bradley Fertilizer Co., Boston, Mass.,	Beverly.
181	Essex Special Cauliflower and Cabbage Manure,	Russia Cement Co., Gloucester, Mass.,	Athol.
183	Essex Odorless Lawn Dressing,	Russia Cement Co., Gloucester' Mass.,	Athol.
186	Fine Ground Tankage,	Williams & Clark Fertilizer Co., Boston Mass ,	Athol.
187	Fish and Potash,	Cumberland Bone Phosphate Co., Boston, Mass.,	Dartmouth.
191	Potato Phosphate,	Cleveland Dryer Co., Boston, Mass.,	W. Andover.
196	Animal Fertilizer,	L. B. Darling Fertilizer Co., Pawtucket, R. I.,	Lowell.
197	Royal Bone Phosphate,	Williams & Clark Fertilizer Co., Boston, Mass.,	Chelmsford.
198	Imperial Bone Superphosphate,	H. F. Tucker & Co., Boston, Mass.,	Leominster.
201	Special Potato Fertilizer,	H. F. Tucker & Co., Boston, Mass.,	Leominster.
203	Butman Brand Fertilizer,	Parmenter & Polsey Fertilizer Co., Peabody, Mass.,	Andover.
204	Northern Corn Special,	Great Eastern Fertilizer Co., Rutland, Vt.,	Chelmsford.
205	Lowell Lawn Dressing,	Lowell Fertilizer Co., Lowell, Mass.,	Lowell.
206	High Grade Complete Manure,	Cleveland Dryer Co., Boston, Mass.,	W. Andover.
225	Sheep Fertilizer,	J. J. Peters & Co., Long Island, N. Y.,	Boston.
266	Soluble Pacific Guano,	Pacific Guano Co., Boston, Mass.,	Sunderland.
269	Nobsque Guano,	Pacific Guano Co., Boston, Mass.,	Lanesboro'gh
292	Lowell Lawn Dressing,	Lowell Fertilizer Co., Lowell, Mass.,	Springfield.

Laboratory Number.	Name of Brand.	Moisture.	Nitrogen in 100 lbs.		Phosphoric Acid in 100 lbs.							Potassium Oxide in 100 lbs.	
								Total.		Available.			
			Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Compound Fertilizers.												
166-225	Sheep Fertilizer,	17.12	1.60	2.36	—	—	—	1.63	1.62	—	—	2.31	2.46
167-269	Nobsque Guano,	14.95	1.17	1.15-1.65	5.62	2.82	1.92	10.36	9-14	8.44	8-12	2.48	2-3
169	High Grade F. F. Truck Fertilizer,	10.77	3.84	3.25-3.75	5.50	1.78	2.44	9.72	9-12	7.28	7-8	7.24	7-8
172-266	Soluble Pacific Guano,	10.25	2.48	2.47-3.30	4.34	2.24	2.24	8.82	7-11	6.58	6-9	11.12	10-11*
174	Garden Special,	13.80	3.57	3.30-4.00	5.22	1.43	1.54	8.19	—	6.65	6-8	6.84	8-10
176	Essex Cauliflower and Cabbage Manure,	6.81	4.58	4-5	4.22	2.82	3.96	11.00	9-11	7.04	7-8	7.67	7.5-8.5
179	Complete Manure with 10 per cent Potash,	8.11	3.40	3.30-4.13	2.44	4.34	2.56	9.34	7-10	6.78	6-10	10.00	10-12
181	Essex Special Cauliflower and Cabbage,	6.62	4.72	4.12-4 94	4 34	3.72	3.96	12.02	10.5-12.5	8.06	7.5-8.5	7.24	7.5-8.5*
183	Essex Odorless Lawn Dressing,	2 97	2.26	3.71-4.53	.56	3.54	5.76	9.86	7-8	4.10	5.5-6.5	7.56	7-8
186	Fine Ground Tankage,	5.65	7.60	7.41-8.24	—	3.20	5.50	8.70	6.87-9.16	3.20	—	—	—
187	Fish and Potash,	16.65	2.12	2.07-2.90	2.04	3.71	3.08	8.83	7.5-10.5	5.75	6-8	2.09	2-3
191	Potato Phosphate,	11.08	2.14	2.05-2 85	5.62	4.54	2.04	12.20	10-13	10.16	8-10	3.02	3-4
196	Animal Fertilizer,	9.98	3.40	3.30-4.94	3.70	4.20	5.12	13.02	10-12	7.90	6-8	4.46	4-6
197	Royal Bone Phosphate,	14.52	1.65	1.03-1.64	6.02	1.90	2.18	10.10	8-11	7.92	7-9	2.22	2-3
198	Imperial Bone Superphosphate,	13.08	2.35	1.-1.50	5.81	4.43	2.02	12.26	11-15	10.24	9-12	1.82	1.85
201	Special Potato Fertilizer,	8.00	4.42	2.06-2.88	4.74	2.04	2.56	9.34	9-12	6.78	8-11	6.08	6-7
203	Butman Brand Fertilizer,	6.67	2.54	2.47-3.30	1.40	6.39	3.21	11.00	8-11	7.79	7-9	2.94	2.5-4.00
204	Northern Corn Special,	13.01	3.28	2.88-3.88	6,52	2.33	1.92	10.77	9-13	8.85	8-10	2.34	2-3
205-292	Lowell Lawn Dressing,	7.15	2.32	4.12-4.94	3.32	3.34	4.34	11.00	9-12	6.66	8-10	5.31	5 6
206	High Grade Complete Manure,	11.34	3.50	3.30 4.12	6.93	1.39	1.51	9.83	9-13	8.32	8-11	7.34	7-8

II. ANALYSES OF COMMERCIAL FERTILIZERS COLLECTED DURING 1897, IN THE GENERAL MARKETS BY THE AGENT OF THE HATCH EXPERIMENT STATION OF THE MASSACHUSETTS AGRICULTURAL COLLEGE.

Laboratory No.	Nane of Brand.	Name of Manufacturer.	Sampled at
	Compound Fertilizers.		
208	High Grade Ammoniated Bone Superphosphate,	E. Frank Coe Co., New York, N. Y.,	Chelmsford.
212	X X V Ammoniated Bone Superphosphate,	E. Frank Coe Co., New York, N. Y.,	Chelmsford.
214	Gold Brand Excelsior Guano,	E. Frank Coe Co., New York, N. Y.,	Sunderland.
216	General American for all Crops,	American Fertilizer Co., Boston, Mass.,	Dartmouth.
217	Potato Fertilizer,	Cumberland Bone Phosphate Co., Boston, Mass.,	North Adams
218	Plymouth Rock Brand,	Parmenter & Polsey Fertilizer Co., Peabody, Mass.,	Beverly.
221	Clover Brand Bone and Wood Ash,	Bowker Fertilizer Co., Boston, Mass.,	Taunton.
223	Quinnipiac Grass Fertilizer,	Quinnipiac Co., Boston, Mass.,	Plymouth.
227	New Rival Ammoniated Superphosphate,	Crocker Fertilizer and Chemical Co., Buffalo, N. Y.,	New Bedford
230	Ammoniated Bone Superphosphate,	Preston Fertilizer Co., Greenpoint, L. I.,	Pittsfield.
231	General Crop Phosphate,	Crocker Fertilizer and Chemical Co., Buffalo, N. Y.,	Westport.
232	Sure Crop Phosphate,	Bowker Fertilizer Co., Boston, Mass.,	North Adams
236	Wood Ashes,	E. McGarvey, London, Ontario, Canada,	Amherst.
238	High Grade Potato Fertilizer,	E. Frank Coe. Co., New York, N. Y.,	Lee.
240	Ammoniated Bone Superphosphate,	National Fertilizer Co., Bridgeport, Conn.,	Dighton.
243	Ammoniated Bone Phosphate,	Berkshire Mills, Bridgeport, Conn.,	Gt. Barrin't'n
244	New Rival Ammoniated Superphosphate,	Crocker Fertilizer and Chemical Co., Buffalo. N. Y..	Westport.
245	Corn Manure,	Quinnipiac Co., Boston, Mass.,	Taunton.
248	Electrical Dissolved Bone,	M. E. Wheeler & Co., Rutland, Vt.,	Tyringham.
252	Animal Fertilizer with Potash,	Bartlett & Holmes, Springfield, Mass.,	Springfield.
253	Blood, Bone and Meat,	Lucien Sanderson, New Haven, Conn.,	Sunderland.
280	Quinnipiac Grass Fertilizer,	Quinnipiac Co., Boston, Mass.,	Pittsfield.
341	Corn Manure,	Quinnipiac Co., Boston, Mass.,	Fitchburg.
354	High Grade Ammoniated Bone Superphosphate,	E. Frank Coe Co., New York. N. Y.,	Lee.
388	Potato Fertilizer,	Cumberland Bone Phosphate Co., Boston, Mass.,	Stow.

Laboratory Number.	Name of Brand.	Moisture.	Nitrogen in 100 lbs.		Phosphoric Acid in 100 lbs.							Potassium Oxide in 100 lbs.	
								Total.		Available.			
			Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Compound Fertilizers.												
208-354	H. G. Ammoniated Bone Superphosphate,	11.30	2.04	2.-2.80	6.78	4.10	1.28	12.16	11-15	10.88	9-12	2.10	1.85-2.00
212	X X V Ammoniated Bone Superphosphate,	10.73	1.37	1-1.25	6.66	3.95	2.82	13.43	9-11	10.61	8-10	1.32	1-2
214	Gold Brand Excelsior Guano,	10.74	2.47	2-3	6.24	2.36	1.74	10.34	9-10	8.60	8-11	5.99	9-11
216	General American for all Crops,	9.06	1.97	1.65-2.47	—	5.50	8.19	13.69	9-10	5.50	6-7	2.14	2-3
217-388	Potato Fertilizer,	11.65	2.15	2.06-2.89	4.50	4.96	2.92	12.38	11-14	9.46	9-11	3.12	3-4
218	Plymouth Rock Brand,	8.67	2.79	2.47-3.29	2.94	5.26	2.68	10.88	9-13	8.20	8-11	4.17	4-5
221	Clover Brand Bone and Wood Ash,	11.95	1.75	1.75-2.25	—	6.96	4.22	11.18	9-11	6.96	7-9	2.56	2.25-3.25
223-280	Quinnipiac Grass Fertilizer,	8.68	4.23	3.91-4.73	2.46	2.27	1,13	5.86	6-9	4.73	5-7	2.33	2-3
227-244	New Rival Ammoniated Superphosphate,	12.39	1.32	1.23-2.00	7.11	3.59	1.33	12.03	8-9	10.70	3-5	1.92	1.60-3.00
230	Ammoniated Bone Superphosphate,	13 90	3.12	2.5-3.5	4.86	2.69	6.96	14.51	—	7.55	9-11	2.96	2-3
231	General Crop Phosphate,	8.80	1.01	.82-1.64	2 68	3 55	1.80	8.03	8-12	6.23	7-10	1.24	1.08-2.50
232	Sure Crop Phosphate,	5.96	1.11	.75-1.50	.15	8.08	6.81	15.04	10-12	8.23	8-10	1.12	1-2
236	Wood Ashes,	12.75	—	—	—	—	—	1.44	1-1.50	—	—	7.16	5-6
238	High Grade Potato Fertilizer,	8.08	2.50	2.4-2.85	6.90	1.74	1.80	10.44	9-11	8.64	8-11	6.15	6-7
240	Ammoniated Bone Superphosphate,	12.57	1.90	1.60-2.00	5.62	2.82	4.10	12.54	9-11	8.44	7-9	2.60	2-3
243	Ammoniated Bone Phosphate,	7.72	2.01	1.65-2.47	1.28	4.60	7.42	13.30	10-12	5.88	8-10	2.14	2-3
245-341	Corn Manure,	11.97	2.35	2.06-2.89	5.38	3.54	3.24	12.16	10-14	8.92	9-12	1.81	1.50-2.50
248	Electrical Dissolved Bone,	8.97	—	—	2.94	6.52	6 02	15.48	15-20	9.46	13-17	—	—
252	Animal Fertilizer with Potash,	5.77	3.88	2.47-3.30	2.56	6.17	4.91	13.64	15-17	8.73	5-7	4.06	7-8
253	Blood, Bone and Meat,	15.08	6.33	5.77-7.41	—	4.89	6.19	11.08	10-12	4.89	—	—	—

II. ANALYSES OF COMMERCIAL FERTILIZERS COLLECTED DURING 1897, IN THE GENERAL MARKETS BY THE AGENT OF THE HATCH EXPERIMENT STATION OF THE MASSACHUSETTS AGRICULTURAL COLLEGE.

Laboratory No.	Name of Brand.	Name of Manufacturer.	Sampled at
	Compound Fertilizers.		
272	Coarse Linseed Meal,	Cleveland Linseed Oil Co., Cleveland, Ohio.,	Fitchburg.
278	Farm and Garden Phosphate,	Bowker Fertilizer Co., Boston, Mass.,	North Adams
299	Grass and Oat Fertilizer,	M. E. Wheeler & Co., Rutland, Vt.,	Willia'stown.
301	Seeding Down Manure,	Quinnipiac Co., Boston, Mass.,	Willia'stown.
304	Potato Manure,	Great Eastern Fertilizer Co., Rutland, Vt.,	Greenfield.
305	Universal Grass Grower,	Crocker Fertilizer and Chemical Co., Buffalo, N. Y.,	Willia'stown.
307	Special Strawberry Fertilizer,	Parmenter & Polsey Fertilizer Co., Peabody, Mass.,	Dighton.
308	Ammoniated Bone Phosphate,	Bradley Fertilizer Co., Boston, Mass.,	Taunton.
309	Potato Phosphate,	Quinnipiac Co., Boston, Mass.,	Taunton.
317	Fruit Fertilizer,	The Rogers & Hubbard Co., Middletown, Conn.,	Westfield.
320	Vegetable and Vine Fertilizer,	Read Fertilizer Co., New York, N. Y.,	Willia'stown.
323	Potato Fertilizer,	American Fertilizer Co., Boston, Mass.,	Fitchburg.
325	Standard Fertilizer,	Standard Fertilizer Co., Boston, Mass.,	Palmer.
326	Ammoniated Wheat and Corn Phosphate,	Crocker Fertilizer and Chemical Co., Buffalo N. Y.,	Westport.
327	Wood Ashes,	Monroe, Lalor & Co., Oswego, N. Y.,	Worcester.
332	Blood, Bone and Potash,	L. B. Darling Fertilizer Co., Pawtucket, R. I.,	Concord.
333	Farm and Garden Phosphate,	Bowker Fertilizer Co., Boston, Mass.,	Palmer.
344	Fertilizer for Hoed Crops,	American Fertilizer Co., Boston, Mass.,	Fitchburg.
350	Potato and Root Crop Manure,	L. B. Darling Fertilizer Co., Pawtucket, R. I.,	Worcester.
356	Potato, Tobacco and Hop Fertilizer,	Niagara Fertilizer Co., Buffalo, N. Y.,	Milbury.
359	Coarse Linseed Meal,	Cleveland Linseed Oil Co., Cleveland, Ohio,	Amherst,
360	Niagara Triumph,	Niagara Fertilizer Co., Buffalo, N. Y.,	Milbury.
363	Animal Fertilizer with Potash,	C. A. Bartlett, Worcester, Mass,,	Worcester.
365	Tobacco Ash Constituents,	Mapes Formula & Peruvian Guano Co., New York, N. Y.	Westfield.

Laboratory Number.	Name of Brand.	Moisture.	Nitrogen in 100 lbs.		Phosphoric Acid in 100 lbs.							Potassium Oxide in 100 lbs.	
								Total.		Available.			
			Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Compound Fertilizers.												
272-359	Coarse Linseed Meal,	10.48	6.42	6.5-7	—	—	—	1.36	1.70-1.80	—	—	1.46	1.45-1.60
278-333	Farm and Garden Phosphate,	11.48	1.81	1.50-2.50	3.84	3.74	4.86	12.46	10-14	7.58	8-11	2.24	2-3
299	Grass and Oat Fertilizer,	14.72	—	—	4.86	5.50	1.66	12.02	—	10.36	11-13	2.18	2-4
301	Seeding Down Manure,	11.25	1.29	.82-1.65	4.22	4.08	2.44	10.74	10-13	8.30	9-11	2.09	2-3
304	Potato Manure,	10.82	2.12	2.-3.50	5.84	3.10	2.04	10.98	9-11	8.94	8-9	4.04	4-4.50
305	Universal Grass Grower,	10.10	.84	.82-1.64	2 94	3.97	.38	7.29	8-12	6.91	7-10	3.28	2.7-4.00
307	Special Strawberry Fertilizer,	4.77	3.08	2.47-3.29	5.76	4.60	1.54	11.90	10-12	10.36	9-10	6.35	6-7
308	Ammoniated Bone Phosphate,	11.99	1.98	2-3	3.07	3.98	4.61	11.66	10-13	7.05	8-10	1.58	1-2
309	Potato Phosphate,	10.02	2.30	2.05-2.83	5.24	3.70	3.08	12.02	9-14	8.94	8-12	3.26	3-4
317	Fruit Fertilizer,	5.56	2.95	2.5-3.	—	5.53	12.51	18.04	17.5-18.5	5.53	—	12.90	12.5-13.5
320	Vegetable and Vine Fertilizer,	11.80	1.80	1.65-2.47	4.98	1.54	1.28	7.80	7-9	6.52	6-8	10.05	8-10
323	Potato Fertilizer	5.17	2.58	3.-3.5	—	5.58	4.96	10.54	—	5.58	6-7	8.94	9-10
325	Standard Fertilizer,	14.28	2.14	2.-3.6	6.14	4.45	1.33	11.92	10-15	10.59	8-12	2.22	2.3
326	Ammoniated Wheat and Corn Phosphate,	16.57	2.00	2-3	7.54	5.09	1.80	14.43	11-15	12.63	10-13	1.76	1.60-2.70
327	Wood Ashes,	14.15	—	—	—	—	—	1.56	—	—	—	5.18	
332	Blood, Bone and Potash,	10.08	4.67	4.5-5.5	4.20	2.40	1.28	7.88	9-11	6.60	7-9	8.58	7-8
344	Fertilizer for Hoed Crops,	9.95	2.65	3.30-3.71	—	9.16	11.13	20.29	—	9 16	11-12	4.18	4-4.50
350	Potato and Root Crop Manure,	6.45	2.82	2.88-4.12	3,58	4.42	5.38	13.38	10-12	8.00	7-9	7.42	7-9
356	Potato, Tobacco and Hop Fertilizer,	11.83	1.91	1.64-2.40	5.73	2.99	1.87	10.59	9-12	8.72	8-10	3.12	2.7-3.78
360	Niagara Triumph,	10.47	3.04	2.47-3.29	5.68	3.02	2.04	10.74	9-12	8.70	8-10	2.37	2.16-3.24
363	Animal Fertilizer with Potash,	4.22	5.00	2.47-3.30	1.92	4.86	3.32	10.10	15-17	6.78	5-7	7.42	7-8
365	Tobacco Ash Constituents,	10.40	.70	.50	—	1.80	4.60	6.40	5.70	1.80	—	16.10	15.00

II. ANALYSES OF COMMERCIAL FERTILIZERS COLLECTED DURING 1897, IN THE GENERAL MARKETS BY THE AGENT OF THE HATCH EXPERIMENT STATION OF THE MASSACHUSETTS AGRICULTURAL COLLEGE.

Laboratory No.	Name of Brand.	Name of Manufacturer.	Sampled at
	Compound Fertilizers.		
368	Fertilizer for Gardens and Lawns,	L. B. Darling Fertilizer Co., Pawtucket, R. I.,	Worcester.
372	Animal Fertilizer,	J. G. Jefferds, Worcester, Mass.,	Worcester.
386	Wood Ashes,	Fyfe, Fay & Plummer, Clinton, Mass.,	Palmer.
390	Tankage,	Lowe Bros. & Co., Fitchburg, Mass.,	Fitchburg.
391	Pure Ground Bone and Meat,	A. P. Henderson, Hanover, Mass.,	Hanover.
394	Boo Boo Plant Food,	City Florist, Brockton, Mass.,	Brockton.
	Ground Bones.		
9	Steamed Bone,	I. P. Thomas & Son Co., Philadelphia Pa.,	Amherst.
10	Pure Ground Animal Bone,	I. P. Thomas & Son Co., Philadelphia, Pa.,	Amherst.
18	Fine Ground Bone,	D. Whithed, Lowell, Mass.,	Lowell.
54	Fresh Ground Bone,	Bowker Fertilizer Co., Boston, Mass.,	Northampton
107	Ground Bone,	National Fertilizer Co., Bridgeport, Conn.,	North Hadley
310	Ground Bone,	Thomas L. Stetson, Randolph, Mass.,	Randolph.
337	Fine Raw Knuckle Bone Flour,	The Rogers & Hubbard Co., Middletown, Conn.,	Springfield.
338	Fine Ground Bone,	L. B. Darling Fertilizer Co., Pawtucket, R. I.,	Concord
357	Fine Ground Bone,	J. G. Jefferds, Worcester, Mass.,	Worcester.
375	Steamed Bone,	McQuade Bros., West Auburn, Mass.,	Worcester.
393	Ground Bone,	E. H. Smith, Northboro, Mass.,	Northboro.

Laboratory Number.	Name of Brand.	Moisture.	Nitrogen in 100 lbs.		Phosphoric Acid in 100 lbs.							Potassium Oxide in 100 lbs.	
								Total.		Available.			
			Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Compound Fertilizers.												
368	Fertilizer for Garden and Lawns,	9.40	4.00	4-6	3.50	4.18	5.06	12.74	10-12	7.68	—	5.08	5-6
372	Animal Fertilizer,	7.62	2.80	2.47-3.30	3.58	3.44	7.94	14.96	16-18	7.02	11-13	2.51	2.5-3.5
386	Wood Ashes,	8.47	—	—	—	—	—	2.30	1-2	—	—	6.79	5-6
390	Tankage,	5.80	4.31	4.00-4.50	—	6.14	15.48	21.62	20-21	6.14	—	—	—
391	Pure Ground Bone and Meat,	7.06	4.72	4-5	—	—	—	15.22	15-16	—	—	—	—
394	Boo Boo Plant Food,	.85	3.30	—	—	.78	11.76	12.54	—	.78	—	7.74	—

Laboratory Number.	Name of Brand.	Mechanical Analysis.			
		Fine.	Fine Med.	Med.	Coarse Med.
	Ground Bones.				
9	Steamed Bone,	74.32	19 52	6.16	—
10	Pure Ground Animal Bone,	7.59	17.62	65.70	9.09
18	Fine Ground Bone,	68.58	27.49	3.93	—
54	Fr sh Ground Bone,	61.10	22.96	13.43	2.51
107	Ground Bone,	18.10	27.67	54.23	—
310	Ground Bone,	12.08	27.85	36.66	23.41
337	Fine Raw Knuckle Bone Flour,	76.53	22.44	1.03	—
338	Fine Ground Bone,	72.84	20.20	6.96	—
357	Fine Ground Bone,	83.20	14.80	2.00	—
375	Steamed Bone,	63.12	30.33	6.55	—
393	Ground Bone,	—	—	—	—

TRADE VALUES
OF FERTILIZING INGREDIENTS IN RAW MATERIALS AND CHEMICALS.

	1897. Cents per pounds.
Nitrogen in ammonia salts,	13.5
" nitrates,	14.
Organic nitrogen in dry and fine ground fish, meat, blood, and in high-grade mixed fertilizers,	14.
" " " cotton-seed meal, linseed meal and in castor pomace,	12.
" " " fine ground bone and tankage,	13.5
" " " medium ground bone and tankage,	11.
" " " coarse bone and tankage,	8.
Phosphoric acid soluble in water,	5.5
" " soluble in ammonium citrate,	5.
" " in fine bone and tankage,	5.
" " in medium bone and tankage,	4.
" " in coarse bone and tankage,	2.5
" " in fine ground fish, cotton-seed meal, linseed meal, castor-pomace and wood ashes,	5.
" " insoluble (in am. cit.) in mixed fertilizers,	2.
Potash as Sulphate, free from Chlorides,	5.
" " Muriate,	4.5

The market value of low priced materials used for manurial purposes, as salt, wood ashes, various kinds of lime, barnyard manure, factory refuse and waste materials of different description, quite frequently does not stand in a close relation to the current market value of the amount of essential articles of plant food they contain. Their cost varies in different localities. Local facilities for cheap transportation and more or less advantageous mechanical conditions for a speedy action, exert as a rule, a decided influence on their selling price.

The market value of fertilizing ingredients like other merchandise is liable to changes during the season. The above stated values are based on the condition of the fertilizer market in centers of distribution in New England, during the six months preceding March 1897.

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